HYDAC INTERNATIONAL

Pressure transmitter
HDA 8400 for series applications

Hydrogen, mobile applications
EC 79/2009 type approval

Relative pressure | **Accuracy 0.5 %**

H_2 EC 79

Features

- Specially designed for the measurement of hydrogen
- Parts in contact with the fluid: stainless steel 1.4435 with a Ni content ≥ 13 % (316L)
- EC 79/2009 type approval

Description

The pressure transmitter series HDA 8400 has been specially developed for measuring tasks with hydrogen in mobile applications. The transmitters are based on a robust, long-life sensor cell with a thin-film strain gauge on a stainless steel membrane. The sensor cell is welded to the process connection, there are no internal seals. The compatibility with hydrogen is ensured by using a particular material. All hydrogen-wetted parts are made of stainless steel 1.4435 with a Ni content of ≥ 13 %.

The transmitters are certified according to the regulations EC 79/2009, the type approval for hydrogen-driven vehicles. For optimum adaptation to the respective application, a variety of hydrogen-suited process connections have been implied into the certification.

For integration into modern controls, standard analogue output signals are available, e.g. 4..20 mA, 0.5 .. 4.5 V or 1 .. 5 V. Ratiometric output signals are also availabe. Various mobile suited, integrated connectors and cable solutions are available for the electrical connection.

Application fields

The applications can be found in all hydrogen-driven vehicles, placed on the market in accordance with the regulations EC 79/2009. In fuel cell electric vehicles (FCEV's) such as cars, buses, trucks, etc., pressures are monitored and regulated, starting with the high-pressure storage system up to the entrance of the fuel cell.

Technical details

Input data												
Measuring ranges	bar	16	25	40	60	100	160	250	400	600	900	1000
Nominal working pressure [1]	bar	30	30	50	70	80	125	200	300	400	700	700
Maximum allowable working pressure [1]	bar	37	37	62	87	100	156	250	375	500	875	875
Burst pressure	bar	125	125	200	300	500	800	1250	2000	3000	3000	3000
Mechanical connection (Tightening torque, recommended)					SF250CX20, Autoclave (7/16-20 UNF 2B) (15 Nm for measuring ranges ≤ 600 bar; 20 Nm for measuring ranges ≥ 600 bar) G 1/4 B DIN EN 837 (20 Nm for measuring ranges ≤ 600 bar; 40 Nm for measuring ranges ≥ 600 bar) 9/16-18 UNF 2A, ISO 8434-3 (25 Nm) 7/16-20 UNF 2A, SAE 4 (15 Nm) 3/8-24 UNF 2A (SAE 3) (10 Nm), only for measuring ranges ≤ 600 bar							
Parts in contact with the fluid					Stainless steel	1.4435 (Ni content ≥ 13 %)						
					Seal	G 1/4 B 9/16-18 UNF 2A, ISO 8434-3 7/16-20 UNF 2A, SAE 4 3/8-24 UNF 2A, SAE 3	Copper (Cu-DHP) Zurcon®22 (Polyurethane) Ecopur					

Output data		
Output signal		Various signals e.g.: 4 .. 20 mA, 0 .. 5 V, 0 ..10 V ratiometric 0.5 .. 4.5 V with U_B=5 V DC (10 .. 90 % U_B)
Accuracy acc. to DIN 16086, terminal based		≤ ± 0.5% FS typ. ≤ ± 1% FS max.
Accuracy, B.F.S.L		≤ ± 0.25% FS typ. ≤ ± 0.5% FS max.
Temperature compensation zero point		≤ ± 0.015% FS / °C typ. ≤ ± 0.025% FS / °C max.
Temperature compensation span		≤ ± 0.015% FS / °C typ. ≤ ± 0.025% FS / °C max.
Non-linearity acc. to DIN 16086, terminal based		≤ ± 0.3% FS max.
Hysteresis		≤ ± 0.4% FS max.
Repeatability		≤ ± 0.1% FS
Rise time		≤ 2 ms
Long-term drift		≤ ± 0.3% FS typ. / year
Environmental conditions		
Compensated temperature range		-25 .. +85 °C
Operating temperature range		-40 .. +100 °C
Storage temperature range		-40 .. +100 °C
Fluid temperature range		-40 .. +125 °C
CE mark		EN 61006-6-1 / 2 / 3 / 4
Vibration resistance acc. to DIN EN 60068-2-6 at 5 .. 2000 Hz		≤ 25 g
Shock resistance acc. to DIN EN 60068-2-27		100 g / 6 ms / half-sine 500 g / 1 ms / half-sine
Protection type [2]	acc. to DIN EN 60529 acc. to ISO 20653	IP 67 IP 6K9K
Other data		
Electrical connection [3]		e.g.: M12x1, 4 pole, Metri-Pack series 150, 3 pole; Deutsch DT04-3P, 3 pole
Supply voltage		8 .. 30 V DC 12 .. 30 V DC (0 .. 10 V output signal) 5 V ± 5 % for ratiometric output signal
Residual ripple of supply voltage		≤ 5 %
Current consumption		≤ 25 mA
Life expectancy		> 10 million load cycles (0 .. 100% FS)
Weight		~ 55 g

Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

FS (**F**ull **S**cale) = relative to complete measuring range

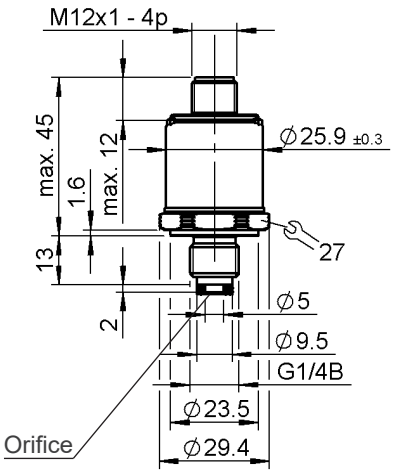
B.F.S.L. = **B**est **F**it **S**traight **L**ine

[1] Type approval EC 79/2009 Nr. e1*79/2009*406/2010*0018*02: Independent of the measuring range associated with the output signal, the transmitters are in compliance with the EC 79/2009 type approval up to the pressures mentioned for "nominal working pressure" and "maximum allowable working pressure".

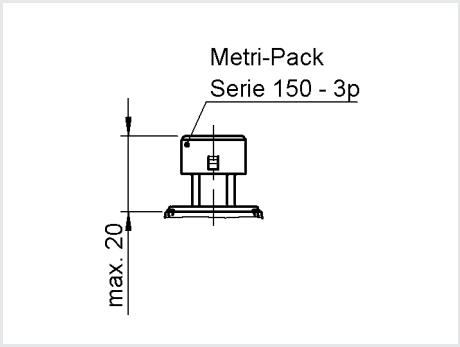
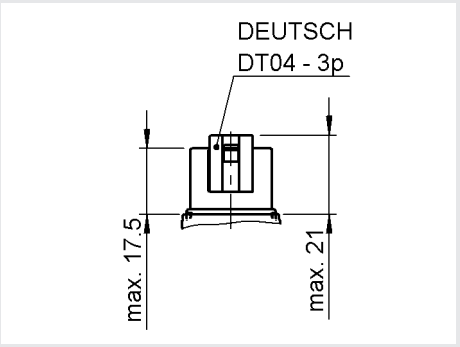
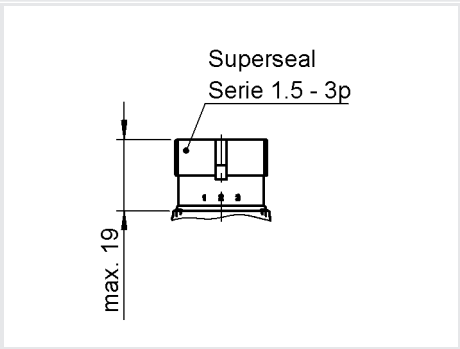
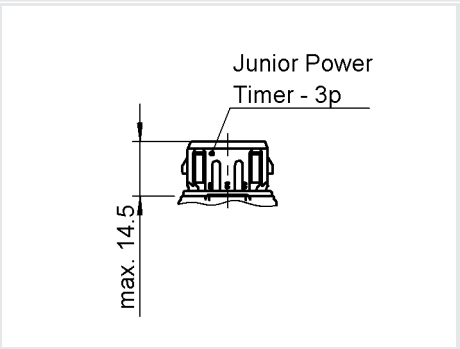
[2] With mounted mating connector in corresponding protection type

[3] Other electrical connections on request

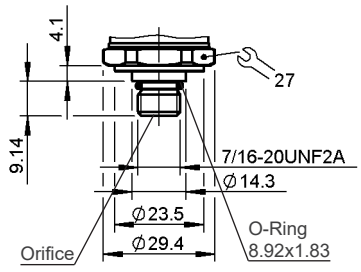
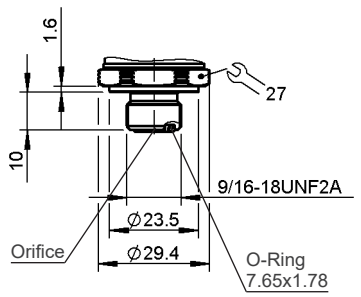
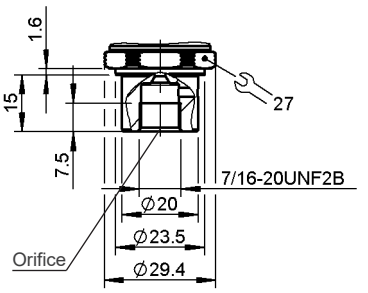
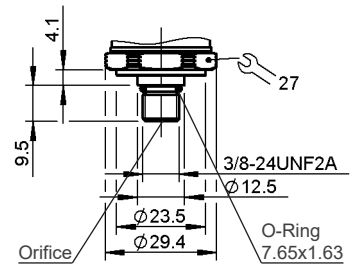
Dimensions



Electrical connection variants

Male connector, Packard Metri-Pack series 150, 3 pole	Male connector, Deutsch DT 04, 3 pole
	
Male connector, AMP Superseal, 3 pole	**Male connector, AMP Junior Timer, 3 pole**
	

Mechanical connection variants

7/16-20 UNF 2A, male thread	9/16-18 UNF 2A with frontal seal, male thread
	
SF250CX20, Autoclave 7/16-20 UNF 2B, female thread	**3/8-24 UNF 2A, male thread**
	

Order details

The pressure transmitter HDA 8400 with type approval EC 79/2009 for hydrogen applications has been especially developed for the use in series applications.
For precise specifications, please contact our HYDAC ELECTRONIC Sales Department.

Note

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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